CLAIMS

What is claimed is:

1. A method for stimulating or promoting vascular wound healing of an endovascular wall injury caused during a vascular interventional procedure, comprising:

delivering a pharmaceutically acceptable preparation of a bioactive agent that comprises a tocopherol agent to the endovascular wall injury;

wherein the bioactive agent delivery further comprises at least one of: locally delivering the bioactive agent to the endovascular wall injury, or delivering a therapeutic dose of a des-methyl tocopherol agent to the endovascular wall injury; and

wherein the local delivery of bioactive agent is sufficient to substantially stimulate or promote vascular wound healing.

2. The method of claim 1, wherein the vascular wound healing is induced or promoted by locally delivering the tocopherol agent to the site of the endovascular wall injury.

3. The method of claim 2, wherein vascular wound healing is induced or promoted by delivering a therapeutic dose of a gamma-tocopherol agent, or a precursor, analog, or derivative thereof, to the endovascular wall injury.

4. The method of claim 1, wherein the tocopherol agent comprises a DNA plasmid

encoding the production of the tocopherol agent, or a precursor, analog or derivative thereof.

5. The method of claim 1, wherein the biologically active tocopherol agent comprises a viral or nonviral gene vector encoding production of such tocopherol molecule.

6. The method of claim 1, wherein the biologically active tocopherol agent comprises gamma-tocopherol.

7. The method of claim 1, wherein the biologically active tocopherol agent is delivered to the site of the endovascular wall injury by a stent that holds and releases the tocopherol agent.

8. The method of claim 1, wherein the tocopherol agent is delivered to the site of the endovascular wound by an angioplasty balloon.

9. A system for initiating or promoting vascular wound healing, comprising:

a bioactive agent in a delivery carrier that is part of a vascular interventional device; and

wherein the bioactive agent comprises at least one of a des-methyl-tocopherol agent and a phytyl substituted chromanol agent.

10. The composition of claim 9, wherein the vascular interventional device comprises a stent that is adapted to hold and elute the bioactive agent.

11. The composition of claim 10, wherein the stent is coated or adsorbed with the delivery carrier containing the bioactive agent.

12. The composition of claim 10, wherein the stent is adapted to elute the bioactive agent.

13. The composition of claim 9, wherein the vascular interventional device comprises an angioplasty balloon.

14. The composition of claim 9, wherein the bioactive agent comprises a tocopherol plasmid.

15. The composition of claim 9, wherein the bioactive agent comprises a tocopherol gene vector.

16. A method for reducing restenosis in response to an endolumenal wall injury, comprising:

implanting an endolumenal stent at a location along a wall of a lumen in a body

of a patient; and

administering a therapeutic dose of a bioactive agent that comprises at least one of a des-methyl tocopherol agent, a phytyl substituted chromanol agent, or a palm oil agent, in a manner providing a higher bioactivity of the bioactive agent at the location than elsewhere in the body and sufficient to reduce restenosis at the location following the stent implantation.

17. A method for reducing restenosis in response to an endolumenal wall injury, comprising:

implanting an endolumenal stent at a location along a wall of a lumen in a body of a patient; and

administering a dose of gamma-tocopherol to the patient in a manner that provides a higher bioactivity of the gamma-tocopherol at the location than elsewhere in the body and sufficient to reduce restenosis at the location following the stent implantation.

18. The method of claim 17, further comprising:

in combination with the administration of gamma-tocopherol, administering a dose of an anti-restenosis agent in a manner that provides a higher bioactivity of the anti-restenosis agent at the location than elsewhere in the body and sufficient to inhibit restenosis at the location following the stent implantation.

19. The method of claim 18, wherein the anti-restenosis agent comprises at least one of sirolimus, tacrolimus, everolimus, ABT-578, paclitaxel, dexamethasone, 17-Beta-estradiol, steroid, des-aspartate angiotensin I (DAA-1), angiotensin converting enzyme inhibitor (ACE inhibitor), angiotensin II receptor blocker, tachykinin, sialokinin, apocynin, pleiotrophin, exochelin, an iron chelator, VEGF, heparin, coumadin, clopidogrel, IIb/IIIa inhibitor, nitric oxide, a nitric oxide donor, an eNOS antagonist, a nitric oxide synthesis promoter, a statin, or a precursor, analog, or derivative thereof, or a combination or blend thereof.

20. The method of claim 18, wherein one of the gamma-tocopherol and the anti-restenosis agent is eluted from the implanted stent, and wherein the other of the gamma-tocopherol and the anti-restenosis agent is delivered systemically.

21. The method of claim 18, wherein at least one of the gamma-tocopherol and the anti-restenosis agent is delivered locally to the location.

22. The method of claim 18, wherein both the gamma-tocopherol and the anti-restenosis agent is eluted from the implanted stent.

23. An implantable endolumenal stent system, comprising:

an implantable endolumenal stent;

a volume of bioactive agent comprising gamma-tocopherol agent, or a precursor,

analog, or derivative thereof, coupled to the stent; and

wherein the endolumenal stent is adapted to elute the volume of gamma-tocopherol into surrounding tissue when the endolumenal stent is implanted along a lumen within a patient.

24. A drug eluting stent system, comprising:

a stent;

a bioactive agent coupled to the stent;

wherein the stent is adapted to elute the bioactive agent into surrounding lumenal wall tissue when implanted along the lumen within a body of a patient; and

wherein the bioactive agent comprises at least one of a des-methyl tocopherol agent and a phytyl substituted chromanol agent.

25. A lumenal wall therapy system, comprising:

a delivery system;

a pharmaceutically acceptable preparation of a bioactive agent that comprises at least one of a des-methyl tocopherol agent and a phytyl substituted chromanol agent; and

wherein the delivery system is adapted to deliver a therapeutic dose of the bioactive agent to a location along a lumenal wall of a lumen within a body of a patient.

26. A drug eluting stent system, comprising:

a stent;

a bioactive agent coupled to the stent;

wherein the stent is adapted to elute the bioactive agent into surrounding lumenal wall tissue when implanted along the lumen within a body of a patient; and

wherein the bioactive agent comprises a pharmaceutically acceptable preparation of palm oil, or a precursor, analog, or derivative thereof.

27. A lumenal wall therapy system, comprising:

a delivery system;

a pharmaceutically acceptable preparation of a bioactive agent that comprises palm oil, or a precursor, analog, or derivative thereof; and

wherein the delivery system is adapted to deliver a therapeutic dose of the bioactive agent to a location along a lumenal wall of a lumen within a body of a patient.

28. The system of claim 9, 24, 25, 26, or 27, wherein the bioactive agent comprises a des-methyl tocopherol agent.

29. The system of claim 9, 24, 25, 26, or 27, wherein the bioactive agent comprises a gamma-tocopherol agent, or a precursor, analog, or derivative thereof.

30. The system of claim 9, 23, 24, 25, 26, or 27, wherein the bioactive agent comprises a delta-tocopherol agent, or a precursor, analog, or derivative thereof.

31. The system of claim 9, 24, 25, 26, or 27, wherein the bioactive agent comprises a phytyl substituted chromanol agent.

32. The system of claim 9, 23, 24, 25, 26, or 27, wherein the bioactive agent comprises a gamma-tocotrienol agent, or a precursor, analog, or derivative thereof.

33. The system of claim 9, 23, 24, 25, 26, or 27, wherein the bioactive agent comprises a delta-tocotrienol agent, or a precursor, analog, or derivative thereof.

34. The system of claim 9, 23, 24, 25, 26, or 27, wherein the bioactive agent comprises a combination of two separate agents, wherein one of the agents comprises a des-methyl tocopherol agent, and the other of the agents comprises a phytyl substituted chromanol agent.

35. The system of claim 9, 23, 24, 25, 26, or 27, further comprising:

a porous metal carrier matrix;

wherein the bioactive agent is located principally within the porous metal carrier matrix and is adapted to elute therefrom into tissue in contact with the porous metal carrier matrix.

36. The system of claim 35, wherein the porous metal carrier matrix comprises a

sintered metal matrix.

37. The system of claim 35, wherein the porous metal carrier matrix comprises a sputtered metal matrix.

38. The system of claim 35, wherein the porous metal carrier matrix comprises an electrochemically deposited matrix.

39. The system of claim 38, wherein the porous metal carrier matrix comprises an electrolessly electrochemically deposited matrix.

40. The system of claim 9, 23, 24, 25, 26, or 27, wherein:

the bioactive agent comprises a first bioactive agent, and

the system further comprises a second bioactive agent that is different from the first agent and that is adapted to be delivered into tissue in combination with the first bioactive agent.

41. The system of claim 40, wherein the second bioactive agent comprises at least one of sirolimus, tacrolimus, everolimus, ABT-578, paclitaxel, dexamethasone, 17-Beta-estradiol, steroid, des-aspartate angiotensin I (DAA-1), angiotensin converting enzyme inhibitor (ACE inhibitor), angiotensin II receptor blocker, tachykinin, sialokinin, apocynin, pleiotrophin, exochelin, an iron chelator, VEGF, heparin, coumadin, clopidogrel, IIb/IIIa

inhibitor, nitric oxide, a nitric oxide donor, an eNOS antagonist, a nitric oxide synthesis promoter, a statin, or a precursor, analog, or derivative thereof, or a combination or blend thereof.

42. The system of claim 9, 23, 24, or 25, wherein the bioactive agent comprises a palm oil agent, or a precursor, analog, or derivative thereof.

43. The system of claim 9, 23, 24, 25, 26, or 27, wherein the bioactive agent comprises a pharmaceutically acceptable preparation of red palm oil agent, or a precursor, analog, or derivative thereof.

44. A method for treating a patient, comprising:

locally delivering to a lumen wall in a patient a bioactive agent that comprises at least one of a des-methyl tocopherol, a phytyl substituted chromanol, and a palm oil agent.